

**EXGUIANA, A NEW GENUS OF NEOTROPICAL PHYCITINES
(LEPIDOPTERA: PYRALIDAE)**

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Abstract.—The new genus *Exguiana* is proposed to receive *Euzophera postflavida* Dyar, n. comb, and three new species, *E. beckeri*, *E. limonensis*, and *E. pitillana*. *Euzophera postflavida* has been known only from female specimens, and its generic placement was uncertain until the recent discovery of males. A key separating the four species, habitus photographs of males, and line drawings of the wing venation, labial palpus, antenna of the male, and male and female genitalia are included.

Resumen.—El género *Exguiana* es propuesto para ubicar la especie *Euzophera postflavida* Dyar, además de tres especies no descritas, *E. beckeri*, *E. limonensis*, and *E. pitillana*. La especie *Euzophera postflavida* ha sido identificada solo de hembras y su posición generica incierta hasta la recolección de machos recientemente. Una clava para las cuatro especies, fotos de los machos, así como dibujos de la venación de las alas, palpus labial, antenna del macho, y genitalia del macho y la hembra son incluidos.

Key Words: Phycitinae, taxonomy, Brazil, Costa Rica, French Guiana, Guyana

Heinrich (1956), in his bulletin dealing with the American phycitines, included a section entitled "Genera and species unplaced, unrecognized, or referred from the Phycitinae." Many of the unplaced species consisted of a female type, or female types, lacking associated males. One of these was Dyar's *Euzophera postflavida* described from French Guiana, an easily recognized species with very distinctive orange coloration and readily identifiable genitalia. Based on an examination of the genitalia, Heinrich rightly concluded "It is not a *Euzophera*." Despite its uniqueness, it has been only recently that additional females, as well as males, of *postflavida* have been collected. These were found in Costa Rica as a result of the biological inventory un-

dertaken by the Instituto Nacional de Biodiversidad of that country, and in Brazil because of the collecting efforts of Vitor Becker. Interestingly, two more species, obviously congeneric with *postflavida*, have been found to occur in Costa Rica, and a fourth species, also belonging to the genus, has been collected in Brazil. In the present paper we place *postflavida* and the other species in a new genus, *Exguiana*.

Abbreviations used for depositories of types and other specimens are as follows: Cornell University, Ithaca, New York, U.S.A. [CU]; Instituto Nacional de Biodiversidad, Santo Domingo, Costa Rica [IN-Bio]; North Carolina State University, Raleigh, North Carolina, U.S.A. [NCSU]; National Museum of Natural History, Wash-

ington, D.C., U.S.A. [USNM]; Vitor O. Becker Collection, Brasilia, D. F., Brazil [VOB].

Exguiana Neunzig and Solis new genus

Type species.—*Euzophera postflavida* Dyar, 1923, by present designation.

Diagnosis.—The male genitalia (Figs. 5–6, 8–9, 11–12, 16–17) have the valva short (not reaching posteriorly to the apex of the uncus), weakly sclerotized and with few setae, and the vinculum abbreviated with the saccus broad and with its anterior margin straight to concave.

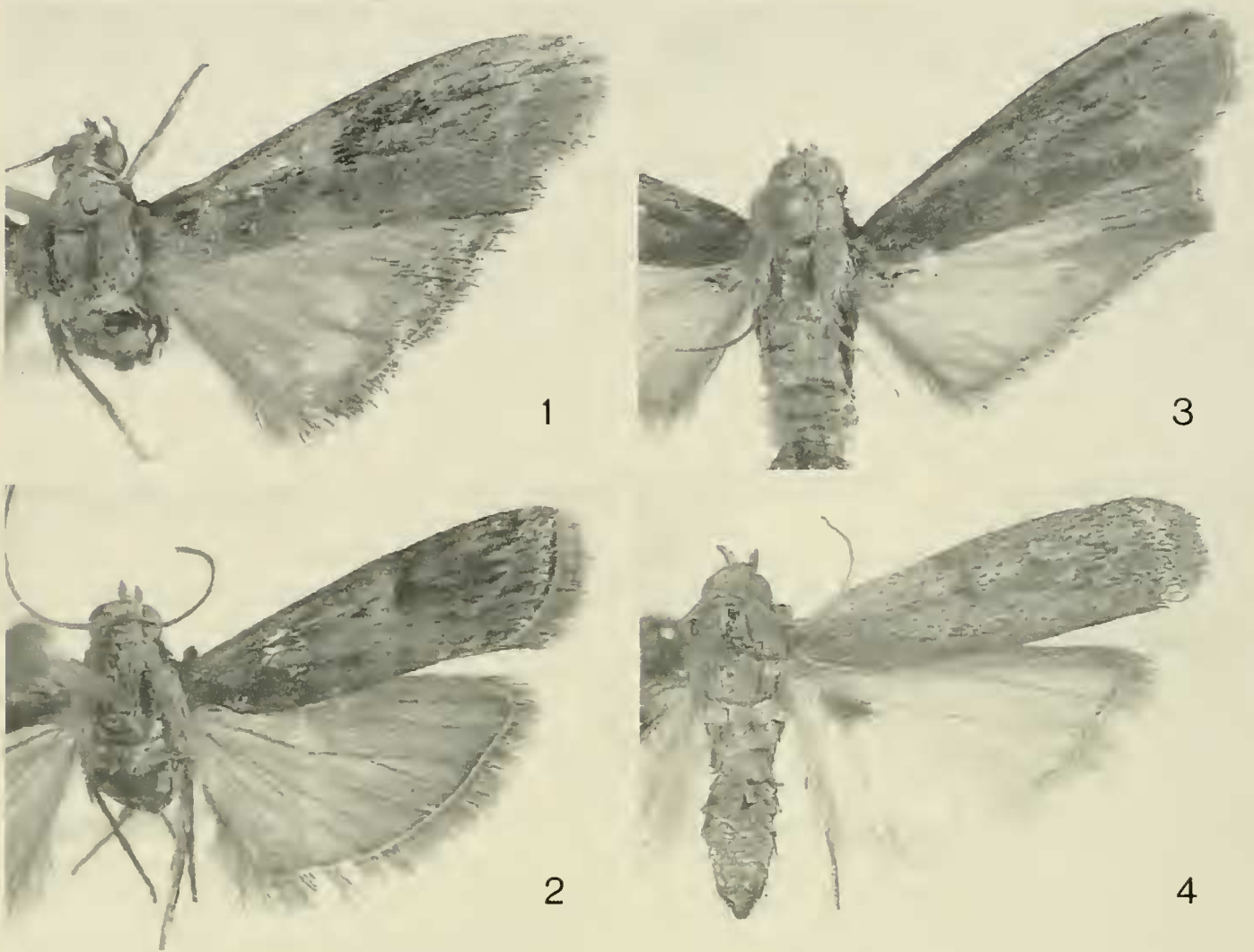
Description.—Antenna (Fig. 14) simple in both sexes; sensilla trichodea (cilia) of shaft abundant and about $\frac{1}{5}$ to $\frac{1}{2}$ as long as basal diameter of shaft. Frons convex, smoothly scaled. Labial palpus (Fig. 15) of both sexes upcurved, reaching slightly above vertex. Maxillary palpus simple, short-scaled in both sexes. Haustellum well developed. Ocelli present. Basal half of costa of forewing of male slightly concave to slightly convex (Fig. 13), and smooth above (*postflavida* with raised scale cluster at base of wing); underside of male forewing simple (*pitillana* with contrastingly colored streaks of scales); forewing with 11 veins; R_2 from cell; R_{3+4} and R_5 fused at base with R_2 and stalked for more than $\frac{1}{2}$ distance beyond cell; M_1 straight; M_2 and M_3 stalked for about $\frac{1}{5}$ distance beyond cell; CuA_1 and CuA_2 separate at base; CuA_2 from before lower angle of cell. Hindwing (Fig. 13) simple above (*limonensis* and *beckeri* with small patch of dark brown to black scales near base); hindwing below simple, or with patches or streaks of colored scales; hindwing with seven veins (1A, 2A and 3A together treated as one vein); Sc + Rs fused for less than $\frac{1}{2}$ distance beyond cell; M_{2+3} and CuA_1 stalked for $\frac{1}{3}$ to $\frac{1}{2}$ distance beyond cell; CuA_2 from before lower outer angle of cell; cell about $\frac{1}{2}$ length of wing; hindwing of most species of usual shape (hindwing of *limonensis* with outer margin lobed just below apex). Male abdominal segment 8 with bushy tufts of ven-

tral scales. Male genitalia (Figs. 5–6, 8–9, 11–12, 16–17) compact (with short valva, vinculum, and saccus); uncus untapered to triangularly shaped; gnathos distally a slender, well-sclerotized element with its apex entire to shallowly forked; transtilla with medial pair of posteriorly projecting arms and with or without anteriorly projecting arms; juxta V-shaped, its distal arms setiferous; valva stubby, with few setae; saccus with well developed tuft(s) of weakly attached scales; aedoeagus short, well-sclerotized, slightly angled; ductus ejaculatoris annulated, with pair of well sclerotized, approximate rods; vesica simple, or with patches of microspines; vinculum about as long as tegumen plus uncus; saccus with anterior margin straight or concave. Female genitalia (Figs. 7, 10, 18) with ostium bursae simple or microspined; ductus bursae about $\frac{1}{2}$ as long as corpus bursae, ribbed in basal half, and scobinate over most of its length or in its distal half; corpus bursae membranous, elongate-oval with signum a well-developed patch of concentrically arranged scobinations (centrally located scobinations in some species, forming a short, inwardly-projecting, spinelike process); ductus seminalis attached to lobe of corpus bursae near junction of ductus bursae and corpus bursae.

Etymology.—The generic name is a combination of the Latin *ex* (from) and the type locality (Guiana) of the type species. The gender is feminine.

KEY TO SPECIES OF *EXGUIANA*

1. Hindwing with many orange scales; transtilla with posteriorly projecting arms as long as length of uncus (Fig. 5) *postflavida* (Dyar)
- Hindwing without many orange scales; transtilla with posteriorly projecting arms shorter than length of uncus (Figs. 8, 11, 16) 2
2. Forewing with well-developed dark spot immediately following antemedial line; underside of male forewing and hindwing with red streaks; transtilla with short, strongly-divergent, posterolaterally directed arms (Fig. 8) *pitillana* Neunzig and Solis, n.sp.
- Forewing without well-developed dark spot and without antemedial line; underside of male fore-



Figs. 1-4. Males, dorsal views. 1, *Exguiana postflavida*. 2, *E. pitillana*. 3, *E. limonensis*. 4, *E. beckeri*.

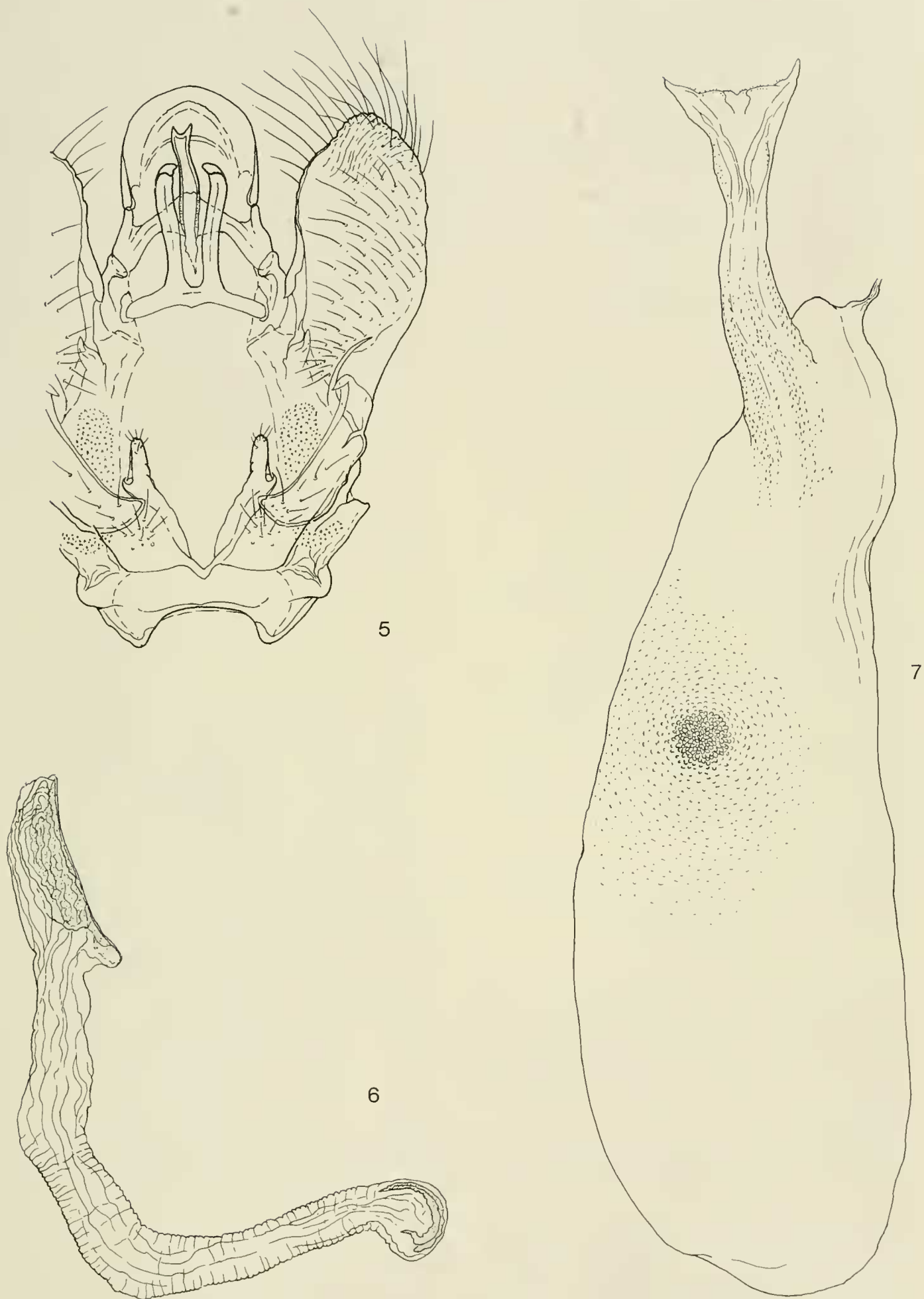
- wing and hindwing without red streaks; transtilla without short, strongly-divergent, posterolaterally directed arms (Figs. 11, 16) 3
- 3. Forewing with costal dusting of white scales along distal third of wing (patch followed posteriorly by dark streak); hindwing of male with outer margin lobed just posterior to apex (Fig. 3), and with basomesial patch of very small, partially covered, dark scales within a pocket of white scales; sacculus with tuft of simple scales (similar to Fig. 8)
 *limonensis* Neunzig and Solis, n.sp.
- Forewing without costal dusting of white scales along distal third of wing; hindwing of male without lobe just below apex, with distinct, uncovered, basomesial patch of dark brown scales (? cubital pecten) on surface; sacculus with tuft of pilous, hooked scales, as well as tuft of simple scales (Fig. 16)
 *beckeri* Neunzig and Solis, n.sp.

***Exguiana postflavida* (Dyar),
 new combination
 (Figs. 1, 5-7, 13-15)**

Euzophera postflavida Dyar 1923:29.

The orange scales covering most of the hindwings of both the male and female, in association with the appearance of the genitalia (Figs. 5-7) will identify this species. In addition to the orange scales, the male hindwing has many slightly-curved, pale ochreous scales. These specialized scales are mostly concentrated into two, pale, oval spots in the anal region, and a less obvious, subapical reniform spot.

The male genitalia of *Exguiana postflavida* have the uncus broadly rounded distally (not gradually tapered towards the apex), a gnathos with its distal, medial element slightly sinuous, with a clearly forked apex, a transtilla with long, medial, posteriorly projecting arms (longer than length of uncus), a valva rounded apically, a vinculum short, and a saccus with its anterior margin concave. The female genitalia have a long obovate corpus bursae with a signum com-



Figs. 5-7. Genitalia, ventral view. *Exguiana postflavida*. 5, Male, aedoeagus and tufts of sacculus removed. 6, Aedoeagus. 7, Female.

posed of very small concentrically-arranged scobinations. The central scobinations of the signum form a shallow, inwardly projecting process.

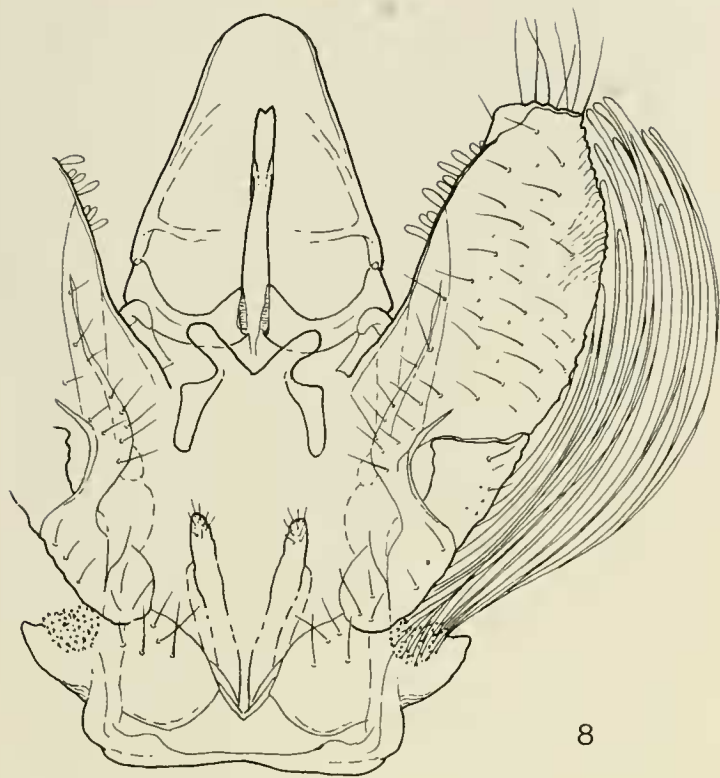
Exguiana postflavida was reported by Heinrich (1956), under the name [*Euzophera*] *postflavida*, as occurring in British Guiana (Guyana), at Tumatumari, near the Potaro River, as well as in French Guiana, at Nouveau Chantier, and at St. Laurent Maroni. All specimens mentioned by Heinrich were females, and collected in June and September. The holotype, in the USNM, from French Guiana has been examined. In Costa Rica two males and one female have been collected as follows: 1 ♂, Rancho Quemado, Peninsula de Osa, 200 m., Provincia Puntarenas, October, 1991, F. Quesada, INBio CR I000507105 [INBio]; 1 ♂, Sector Cerro Cocori, Finca de E. Rojas, 150 m., Provincia Limon, May, 1992, E. Rojas, INBio CR I000438406, genitalia slide 4756 HHN [INBio]; 1 ♀, Fila Esquinas, 35 km. S. Palmar Norte, Provincia Puntarenas, January, 1983, D. H. Janzen & W. Hallwachs, INBio CR I002043324 [INBio]. In Brazil one male and two females have been collected at Maricá, Minas Gerais, 5 m, 12–15, January, 1985, V. O. Becker No. 54577 [VOB, NCSU].

Exguiana pitillana Neunzig and Solis
new species
(Figs. 2, 8–10)

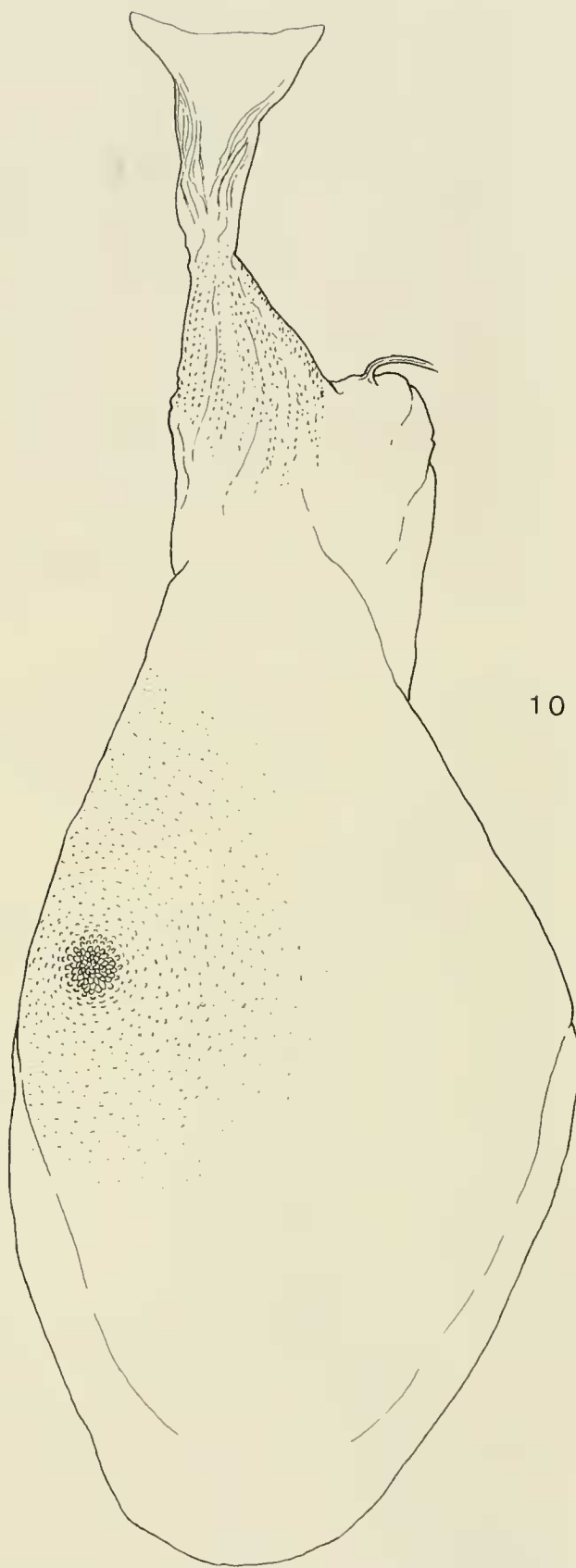
Diagnosis.—The transtilla of the male (Fig. 8) has short, strongly divergent, posterolaterally directed arms, and the well developed streaks of red scales on the underside of the wings of the male will help identify this species.

Description.—Forewing length 9.0–10.0 mm. *Head*: Frons and vertex brownish white to brown; labial palpus upturned, reaching above vertex, outwardly entirely brownish white or brownish white with basal segment dark brown; maxillary palpus simple, with brownish white scales; antenna of male simple, with sensilla trichodea (cilia) about $\frac{1}{5}$ as long as basal diameter of

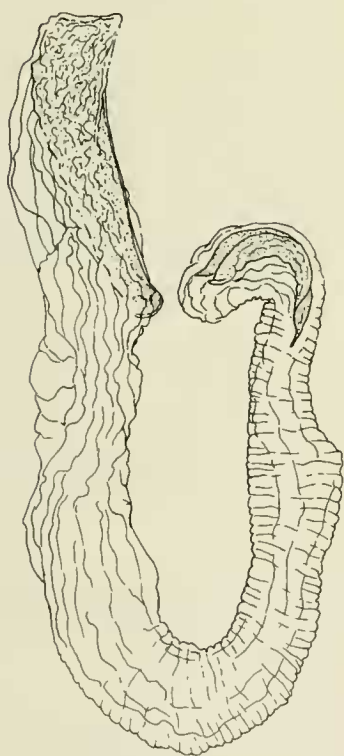
shaft. *Dorsum of thorax*: Pale brown and dark brown, washed with brownish red in some specimens. *Forewing*: Mostly a mixture of pale brown and brownish red scales; antemedial line weakly developed, consisting of an incomplete, angled line of white scales in the costal half of the wing; postmedial line faint, formed of very small, isolated patches of white scales; several patches of black scales, most noticeably at posterior base of wing, immediately following antemedial line in costal half of wing, and preceding postmedial line; a few scattered, white scales on costal half of wing and in terminal area of wing; discal spots black, partially suffused with red; underside of wing of male with strongly developed streaks of red scales on base of veins. *Hindwing*: Brown above in both sexes; male with streaks of red scales on base of veins on underside of wing. *Male genitalia* (Figs. 8–9): Uncus strongly tapered towards apex (triangular); gnathos with apical process slender, long (about as long as length of uncus) with shallowly forked apex; transtilla with medial pair of distinctly diverging, posterolaterally projecting arms (arms about $\frac{1}{3}$ as long as length of uncus) and with pair of, about the same size, anteriorly projecting arms; juxta narrowly V-shaped; valva short, truncate distally; sacculus with tuft of long, slightly curved, simple scales; aedoeagus with ductus ejaculatoris annulated and with pair of sclerotized rods; vesica simple; vinculum as long as tegumen plus uncus; saccus with anterior margin almost straight. *Female genitalia* (Fig. 10): With ductus bursae about $\frac{1}{2}$ as long as corpus bursae, slightly ribbed in basal half and densely scobinate over most of its distal half; corpus bursae membranous elongate oval, with numerous, minute scobinations; some scobinations slightly enlarged, densely grouped, strongly sclerotized and concentrically arranged to form a signum; scobinations in center of signum forming a shallow, inwardly projecting process; ductus seminalis attached



8



10



9

Figs. 8–10. Genitalia, ventral view, *Exguiana pitillana*. 8, Male, aedoeagus removed. 9, Aedoeagus. 10, Female.

to lobe of corpus bursae near junction of ductus bursae and corpus bursae.

Holotype.—♂. Estacion Pitilla, 700 m., 9 km. S. Sta. Cecilia, Provincia Guanacaste, Costa Rica, November 1990, C. Moraga

and P. Rios, INBio CR 1000641805, genitalia slide 4766 HHN [INBio].

Paratypes.—4 ♂, 3 ♀. Same label information as holotype, except March 1991, June 1991, 1992, 1993, 1995, INBio CR

I000009219, INBio CR I000381350, INBio CR I000616579, INBio CR I000616585, INBio CR I000676126, INBio CR I001354291, INBio CR I002210648, genitalia slides 616,579 MC, 676,126 MC, 4767 HHN, 4770 HHN [INBio, USNM, NCSU]; 1 ♀. Turrialba, February, March 1965, S. S. and W. D. Duckworth, genitalia slides 5439 HHN, 5441 HHN [USNM]; 1 ♀. Turrialba, 600 m., Costa Rica, July 1981, V. Becker, genitalia slide 4928 HHN [VOB].

Etymology.—The name *pitillana* refers to the type locality, Estacion Pitilla.

Exguiana limonensis Neunzig and Solis
new species

(Figs. 3, 11, 12)

Diagnosis.—The hindwing of the male has its outer margin distinctly lobed just posterior to its apex, and has basally a unique dorsal pocket that contains a cluster of tiny, black scales.

Description.—Forewing length 10.5–11.0 mm. *Head*: Frons brownish white; vertex pale brown; labial palpus upturned reaching above vertex; mostly brownish white on outer surface with a few white scales on basal segment; maxillary palpus simple, with brownish white scales; antenna of male simple, with sensilla trichodea (cilia) about $\frac{1}{2}$ as long as basal diameter of shaft. *Dorsum of thorax*: Pale brown and dark brown or reddish brown. *Forewing*: Ground color a mixture of pale brown and brown; antemedial and postmedial lines absent; with costal dusting of white on distal third of wing, and patches or streaks of dark brown elsewhere on wing (most obvious dark streak extends from base of wing to just posterior of whitish costal patch); also, streaks or patches of red scales, particularly noticeable in median fold; discal spots dark brown. *Hindwing*: Of male pale brownish white with outer margin lobed just posterior to its apex, and with basal pocket with short white scales partially concealing dense cluster of very small black scales. *Male genitalia* (Figs. 11–12): Uncus subtriangular, slightly tapered toward apex; gnathos

with apical process moderately elongate with very shallowly forked apex; transtilla with medial pair of posteriorly projecting arms (arms about $\frac{1}{2}$ as long as length of uncus and weakly sclerotized over most of their lengths), and with slightly shorter, more slender, more laterally positioned, pair of anteriorly projecting arms; juxta narrowly V-shaped; valva short with distal end truncate; sacculus with tuft of long, slightly curved, simple scales; aedoeagus with ductus ejaculatoris annulated and with pair of sclerotized rods; vesica with patch of small spines; vinculum only slightly longer than tegumen plus uncus; saccus with anterior margin very shallowly concave. *Female genitalia*: Probably similar to those illustrated in Figs. 7, 10, 18 (no females of *Exguiana limonensis* have thus far been collected).

Holotype.—♂. Sector Cocori, 30 km. de Cariari, 150 m., Finca E. Rojas, Area de Conservación Tortuguero, Provincia Limon, Costa Rica, Ene. 1994, E. Rojas, INBio CR I001856744 [INBio]. Paratype: 1 ♂. Same label information as holotype, except 12 a 31 ago. 1992, INBio CR I000753739, genitalia slide 4758 HHN [USNM].

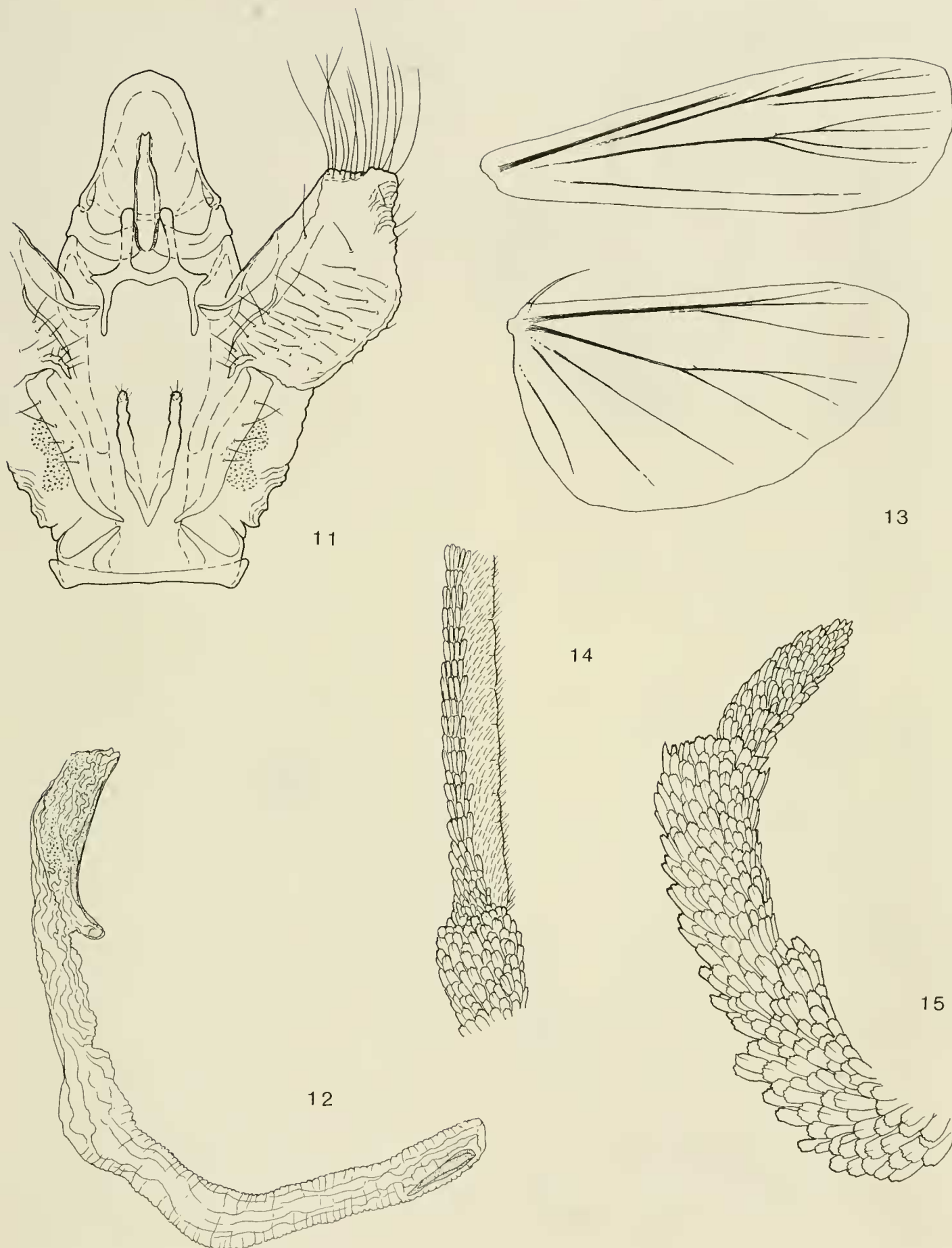
Etymology.—The specific epithet is derived from the province in Costa Rica where the holotype and paratype were collected (Limon) and the Latin adjectival suffix *-ensis* (belonging to).

Exguiana beckeri Neunzig and Solis
new species

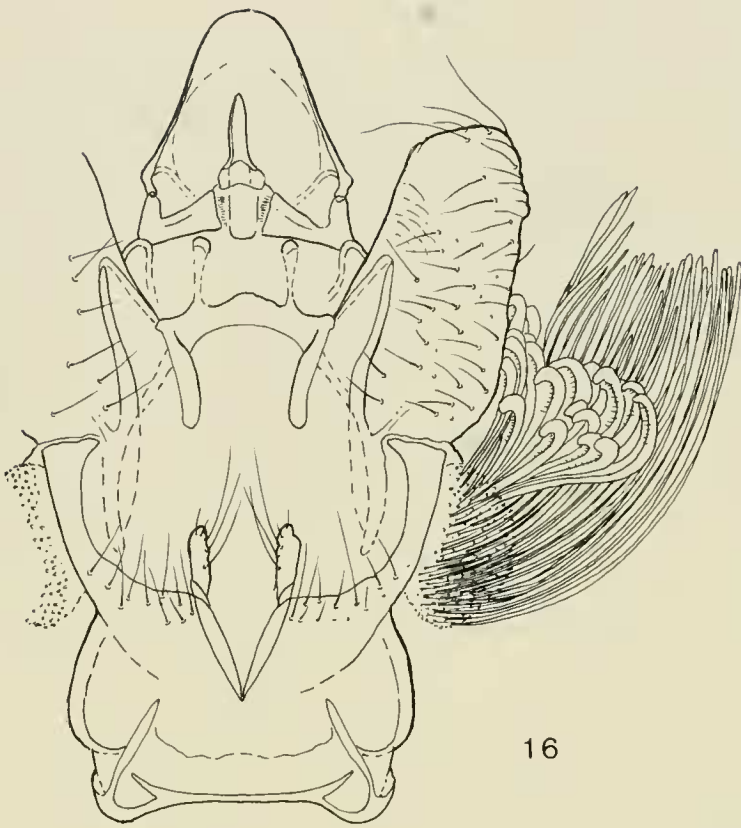
(Figs. 4, 16–18)

Diagnosis.—Males of *Exguiana beckeri* have a well exposed, dark brown to black tuft of scales near the dorsal base of the hindwing (Fig. 4) and pilous, hooked scales attached to the sacculus of the genitalia (Fig. 16).

Description.—Forewing length 9.0–10.0 mm. *Head*: Frons whitish brown; vertex pale reddish brown; labial palpus upturned, reaching above vertex, outwardly clothed in mixture of white, reddish brown, pale



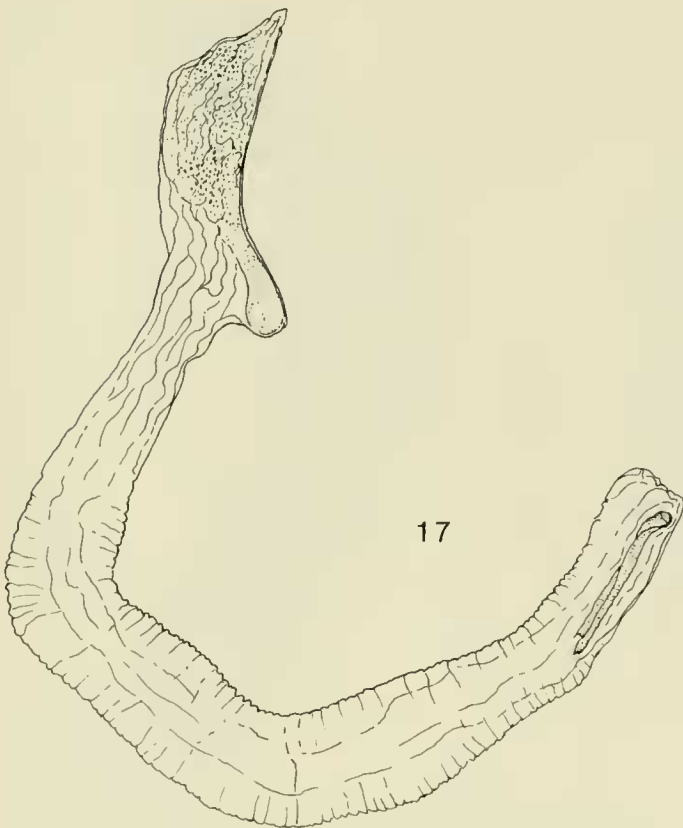
Figs. 11–15. Male genitalia, ventral view, *Exguiana limonensis*, and male wings, antenna and labial palpus, *E. postflavida*. 11, Genitalia (aedoeagus and tufts of sacculus removed). 12, Aedoeagus. 13, Right forewing and hindwing. 14, Left antenna, frontal view. 15, Left labial palpus, lateral view.



16



18



17

Figs. 16–18. Genitalia, ventral view, *Exguiana beckeri*. 16, Male, aedeagus removed. 17, Aedeagus. 18, Female.

brown and dark brown scales (most dark brown scales at basal half of palpus); maxillary palpus simple, with white to brownish white scales; antenna of male simple, with

sensilla trichodea (cilia) about $\frac{1}{5}$ as long as basal diameter of shaft. *Dorsum of thorax*: Pale brown. *Forewing*: Ground color dark brown; antemedial and postmedial lines ab-

sent (a few pale scales present where these lines usually occur, but no organized lines discernible); a weak dusting of white scales over most of wing, and streaks and patches of brownish red and red scales; discal spots dark brown, indistinct, blending with dark brown ground color of wing. *Hindwing*: Mostly pale brownish white, in part transparent, brown along anterior and outer edges of wing; male with linear, dark brown to black basomesial scale tuft (? cubital pecten) that strongly contrasts with inner part of wing. *Male genitalia* (Figs. 16–17): Uncus strongly tapered towards apex (triangularly shaped); gnathos with apical process short (about $\frac{1}{2}$ as long as length of uncus) with apex entire; transtilla with medial pair of narrow, posteriorly projecting arms (arms about $\frac{1}{2}$ as long as length of uncus, and weakly sclerotized for most of their lengths), and with pair of about as long, but more robust, anteriorly projecting arms; juxta narrowly V-shaped; valva short, rounded distally; sacculus with two tufts of scales (a tuft of long, slightly curved, simple scales, and a more posteriorly located unusual tuft of short, hooked, pilous scales); scale-bearing part of sacculus bulbous, strongly projecting laterally); aedoeagus with ductus ejaculatoris annulated and with pair of sclerotized rods; vesica with patch of small spines; vinculum slightly longer than tegumen plus uncus; saccus with anterior margin shallowly concave. *Female genitalia* (Fig. 18): With ductus bursae about $\frac{1}{2}$ as long as corpus bursae, slightly ribbed in basal half, and scobinate over most of its length (particularly near corpus bursae); corpus bursae membranous, elongate oval with many very small, weakly formed scobinations; signum a rosette of much larger, strongly sclerotized scobina-

tions; center of signum only slightly indented; ductus seminalis attached to lobe of corpus bursae near junction of ductus bursae and corpus bursae.

Holotype.—♂. Sete Lagoas, Minas Gerais, 720 m., Brazil, 24-VII-1969, V. O. Becker, genitalia slide 4631 HHN [VOB].

Paratypes.—3 ♂, 2 ♀. Same collection data as holotype, genitalia slide 5714 HHN [USNM, NCSU]; 1 ♂. Same collection data as for holotype except collected 21-VII-1969, genitalia slide 4632 HHN, [VOB]; 2 ♂, 1 ♀. Ilha do Bananal, Goiás, Brasil, 4-8-IX-1977, V. O. Becker, genitalia slide 5716 HHN [USNM]; 1 ♂, 1 ♀. Planatina, Distrito Federal, 1,000 m., Brasil, 3-V-1983, V. O. Becker, genitalia slide 5715 HHN [USNM].

Etymology.—This species is named after Vitor Osmar Becker who collected the type series, and who has assiduously collected many other Neotropical Lepidoptera.

ACKNOWLEDGMENTS

We thank Eugenie Phillips (Instituto Nacional de Biodiversidad, Santo Domingo, Costa Rica), and Vitor Becker (Brasilia, Brasil) for giving us the opportunity to study specimens of *Exguiana* in the INBio collection and in the Becker collection, respectively. Robert L. Blinn (North Carolina State University) took the habitus photographs. Jay Shaffer (George Mason University, Fairfax, Virginia, U.S.A.), and Ron Ochoa (Systematic Entomology Laboratory, Washington, D.C., U.S.A.) reviewed a draft of the manuscript.

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